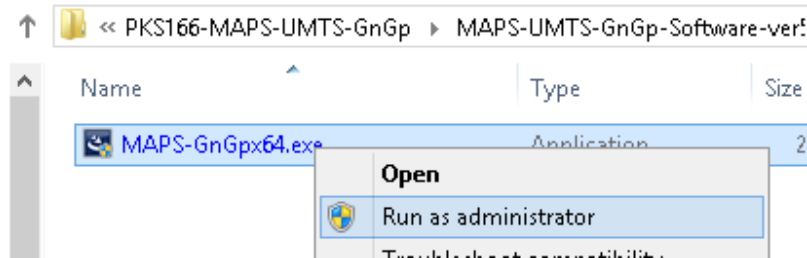


Software and License Installation

DO NOT CONNECT USB DONGLE TO THE PC FIRST. Perform Software installation first, followed by License installation and then plug-in the USB hardware dongle to the PC.

- PC Requirements
 - Windows® 7 and above Operating System (**64 bit Only**).
 - Core i3 to i7 (or equivalent), 4 GB Memory, NIC, and USB 2.0 Ports.
- Plug-in the **USB Installation Stick** (pen drive) to the PC. This is provided with the shipment package by GL Communications.
- Navigate to **\PKS166-MAPS-UMTS-GnGp\MAPS-UMTS-GnGp-Software-verXX** folder, right click **MAPS-GnGpx64.exe** and select **Run as Administrator**. Follow the onscreen instructions and complete the installation.




- Navigate back to root directory in USB installation stick (pen drive) to **GL-Dongle License Installer** folder, execute **GLDongleLicenseInstaller_x64.exe**. Follow the onscreen instructions and complete the installation.
- NOW PLUG-IN the USB Dongle to the PC to the USB 2.0 port of your computer. Windows® should install all required drivers automatically. A red light should appear on the dongle indicating that the device is functioning correctly and ready to use.
- It is recommended to reboot the system after the software installation. If you had problems with installation so far, refer to [Troubleshoot](#) section explained in this document.
- You can verify if the required licenses are installed. Navigate to **C:\Program Files\GL Communications Inc\GLDONGLE** directory, execute **appl_list.exe** and confirm that the PKS166 (UMTS-Gn Interface Emulation) license is listed.


Verification

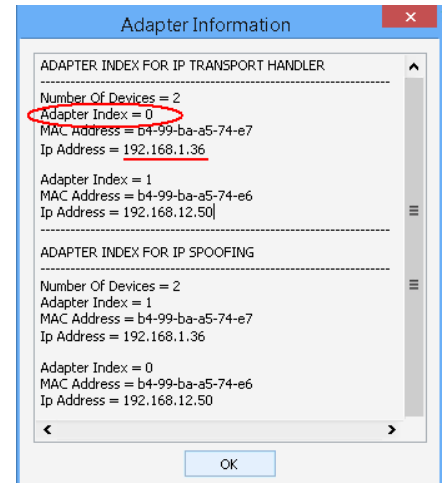
For functional verification, **MAPS™ GnGp** application can be configured on single PC in loopback mode.

On first instance, MAPS™ is configured as **SGSN** (Serving GPRS Support Node), and on the second instance, MAPS™ is configured as **GGSN** (Gateway GPRS Support Node) nodes simulating supported procedures. The following explains **MAPS™ GnGp** configuration on the same PC in loopback mode.

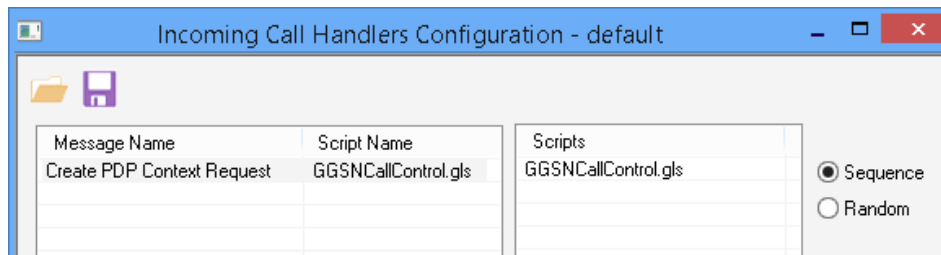
First MAPS™ GnGp (GUI) configured as GGSN

- Right-click on **MAPS-GnGp** application shortcut icon created on the desktop and select ‘Run as Administrator’ to invoke the application. The first instance of MAPS™ is configured for **Call Reception**.
- While invoking the first MAPS-GnGp instance, verify the following in the Protocol Selection window -
 - Protocol Standard is set to **UMTS GnGp**
 - Protocol Version to **3GPP**
 - Select **Node** as **GGSN**. Click **Ok**
- By default, **Testbed Setup** window is displayed. Click  and select **SelfTest** and check for the parameter default values as listed below:



- The **Display Adapter Info** option from the **Help** menu displays all the network adapters available in the system. Choose and set the **Adapter Index** value displayed against the IP address in use.
- Set **GGSN IP Address** to PC IP address
- By default, **GGSN Port** is set to **2124**
- Set **SGSN IP address** to PC IP address
- By default, **SGSN Port** to **2123**
- Set Traffic to disable.
- Click  **Save** button and overwrite the **SelfTest** configuration file.




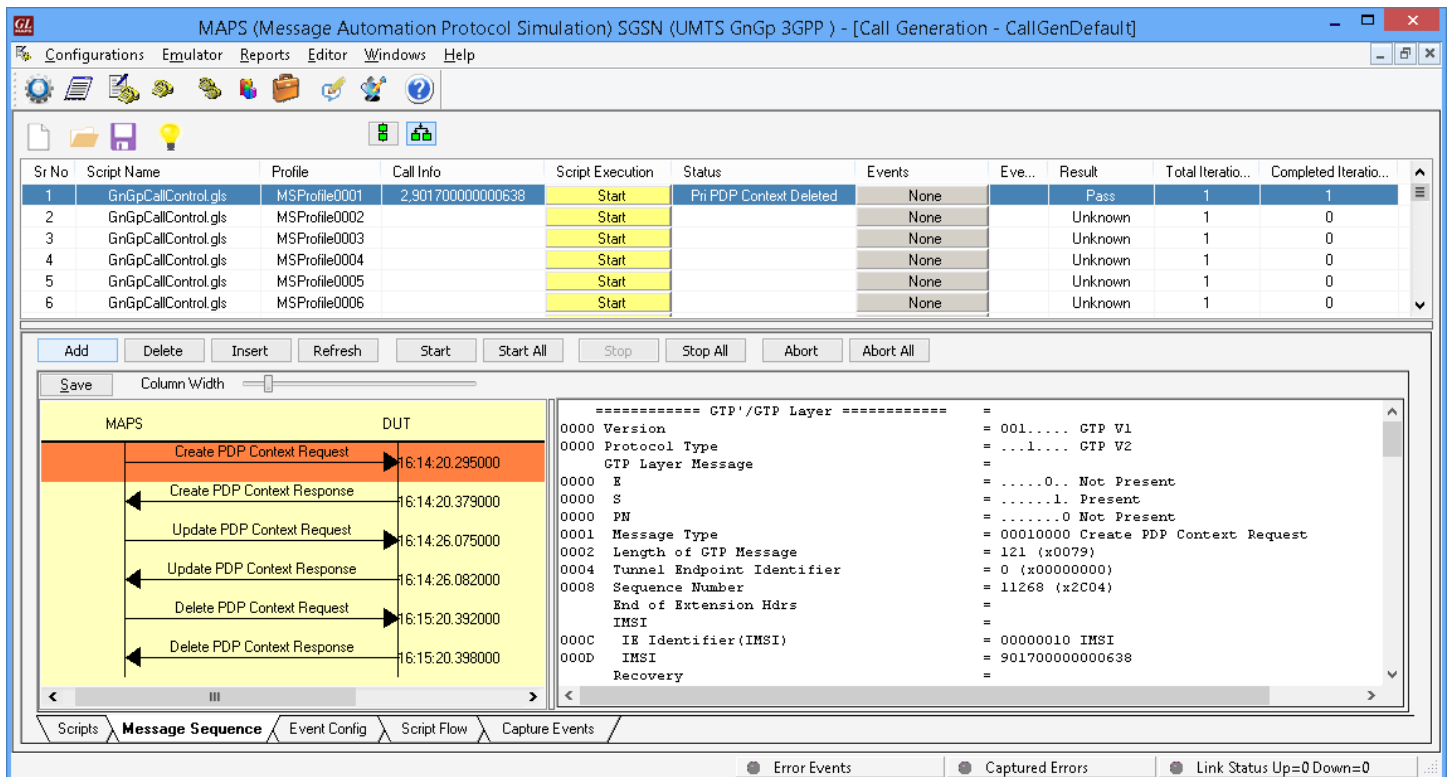
- On the same MAPS-GnGp main window, from **Configuration** menu > select **Incoming Call Handler Configuration** and invoke the window. Verify that **GGSNCallControl.gls** script is set against **Create PDP Context Request** message. Exit from the window.



Second MAPS™ GnGp (GUI) configured as SGSN

- Right-click on **MAPS-GnGp** application shortcut icon created on the desktop and select 'Run as Administrator' to invoke the application. The first instance of MAPS™ is configured for **Call Generation**.
- While invoking the second MAPS-GnGp instance, verify the following in the Protocol Selection window
 - **Protocol Standard** is set to **UMTS GnGp**
 - **Protocol Version** to **3GPP**
 - Select **Node** as **SGSN**
 - Click **Ok**
- By default, **Testbed Setup** window is displayed. Click  and select **SelfTest** and check for the parameter default values as listed below:
 - The **Display Adapter Info** option from the **Help** menu displays all the network adapters available in the system. Choose and set the **Adapter Index** value displayed against the IP address in use.
 - Set **SGSN IP Address** to PC IP address
 - By default, **SGSN Port** is set to **2123**
 - Set **GGSN IP address** to PC IP address
 - By default, **GGSN Port** is set to **2124**
 - Set Traffic to disable.
 - Click  **Save** button and overwrite the **SelfTest** configuration file.

- **Start** the testbed on both the MAPS instances (GGSN and SGSN)
- In the second MAPS-GnGp (SGSN) instance, click the **Call Generation**  icon on main window, and invoke the **Call Generation** window.
- By default, multiple call instances loaded with **GnGpCallControl.gls** script and **MSPProfile00**** profiles are displayed. Select the instance loaded with **GnGpCallControl.gls** script with **MSPProfile0001** profile and click **Start** button and initiate call generation.
- Return to first instance of MAPS-GnGp (GGSN), in the **Call Reception** window, observe that the calls are automatically received running the Rx script.
- Wait for the calls to terminate, and verify the call flow under the **Message Sequence** tab at both generation and reception end.
- Select any message in the ladder diagram and observe the respective decode message on the right pane for the respective message.



Sr No	Script Name	Profile	Call Info	Script Execution	Status	Events	Eve...	Result	Total Iteratio...	Completed Iteratio...
1	GnGpCallControl.gls	MSPProfile0001	2,901700000000638	Start	Pri PDP Context Deleted	None		Pass	1	1
2	GnGpCallControl.gls	MSPProfile0002		Start		None		Unknown	1	0
3	GnGpCallControl.gls	MSPProfile0003		Start		None		Unknown	1	0
4	GnGpCallControl.gls	MSPProfile0004		Start		None		Unknown	1	0
5	GnGpCallControl.gls	MSPProfile0005		Start		None		Unknown	1	0
6	GnGpCallControl.gls	MSPProfile0006		Start		None		Unknown	1	0

MAPS	DUT	Time
→ Create PDP Context Request		16:14:20.295000
← Create PDP Context Response		16:14:20.379000
→ Update PDP Context Request		16:14:26.075000
← Update PDP Context Response		16:14:26.082000
→ Delete PDP Context Request		16:15:20.392000
← Delete PDP Context Response		16:15:20.398000

```

===== GTP'/GTP Layer =====
0000 Version                = 001..... GTP V1
0000 Protocol Type         = ...1.... GTP V2
      GTP Layer Message
0000 E                     = .....0.. Not Present
0000 S                     = .....1. Present
0000 PN                    = .....0 Not Present
0001 Message Type         = 00010000 Create PDP Context Request
0002 Length of GTP Message = 121 (x0079)
0004 Tunnel Endpoint Identifier
0008 Sequence Number      = 11268 (x2C04)
      End of Extension Hdrs
      IMSI
000C IR Identifier (IMSI)  = 00000010 IMSI
000D IMSI                 = 901700000000638
      Recovery
  
```

Troubleshoot

- **“Unknown device” error while installing USB Dongle.** If you see this error, ensure you have installed the GL Dongle License Installer software first and then plugged the USB Dongle to the PC. The USB Dongle will then be recognized as “SafeNetInc. USB Key” and appropriate drivers will get installed automatically. If problem still persists, plug the USB Dongle to a different USB2.0 port and try again.
- **Error: “Security Error: Application is not licensed”,** if you see this error when you run MAPS™ GnGp it indicates a problem with either your dongle or license file.
 - First verify that the dongle is plugged in and the red light is on
 - To use MAPS™ 64-bit version – use *GLDongleLicenseInstaller_x64.exe* utility to install licenses
 - Navigate to *C:\Program Files\GL Communications Inc\GLDONGLE*
 - Run *haspinfohl.exe*. Verify that Status is **OK** and make a note of the Serial #.
 - Run *appl_list.exe*. Verify that there is a line in the table reading *PKS166 UMTS-Gn Interface Emulation* with the serial number you noted above.
 - If the dongle does not appear in *haspinfohl.exe*, verify that it appears as a USB device in the **Windows Device Manager**. If it does not appear even in the device manager, remove the dongle and plug it into a different USB port, preferably one directly on the motherboard.
- **Error: “Unable to create GLIpHandler:Invalid Arguments”,** if you see this error when you start the Testbed from MAPS™ GnGp application it indicates that the Network Adaptor is not configured correctly.
 - From **Help** menu -> run **Display Adaptor Info** and obtain the **Adapter Index** for the IP address in use, which has to be appropriately configured in the Testbed.
- If you cannot resolve the issues, please contact GL Communications at info@gl.com for technical support.